A Sierra Monitor Company

Driver Manual
(Supplement to the FieldServer Instruction Manual)

FS-8700-19 Metasys N2

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after May 1, 2001

Driver Version:	**1.02**
Document Revision:	**22**

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1. Metasys N2 Description

The Metasys N2 network supports communications with a diverse range of devices. Many N2 compatible devices use their own version of the protocol and care must be taken to ensure that the device of interest is covered by the FieldServer implementation.

At present the FieldServer N2 driver will support communications with the following devices or device classes when acting as a Client:

1. **N2Open**-compliant devices. N2Open is a published N2-compatible protocol enabling 3rd party device vendors to integrate with N2.
2. **VMA 1400** series (with restrictions, as described in this document)
3. **DX9100** and **XT9100**

When acting as a Server, the FieldServer N2 driver can emulate an N2Open device only.

2. Driver Scope of Supply

2.1. Supplied by FieldServer Technologies for this driver

FieldServer Technologies PART #	Description
FS-8915-10	UTP cable (7 foot) for Ethernet connection
FS-8915-10	UTP cable (7 foot) for RS-232 use
FS-8917-02	RJ45 to DB9F connector adapter
FS-8917-01	RJ45 to DB25M connection adapter
SPA59132	RS-485 connection adapter
FS-8700-19	Driver Manual.

2.2. Provided by the Supplier of 3rd Party Equipment

2.2.1. Hardware

PART #	DESCRIPTION
	Metasys NCU or other device

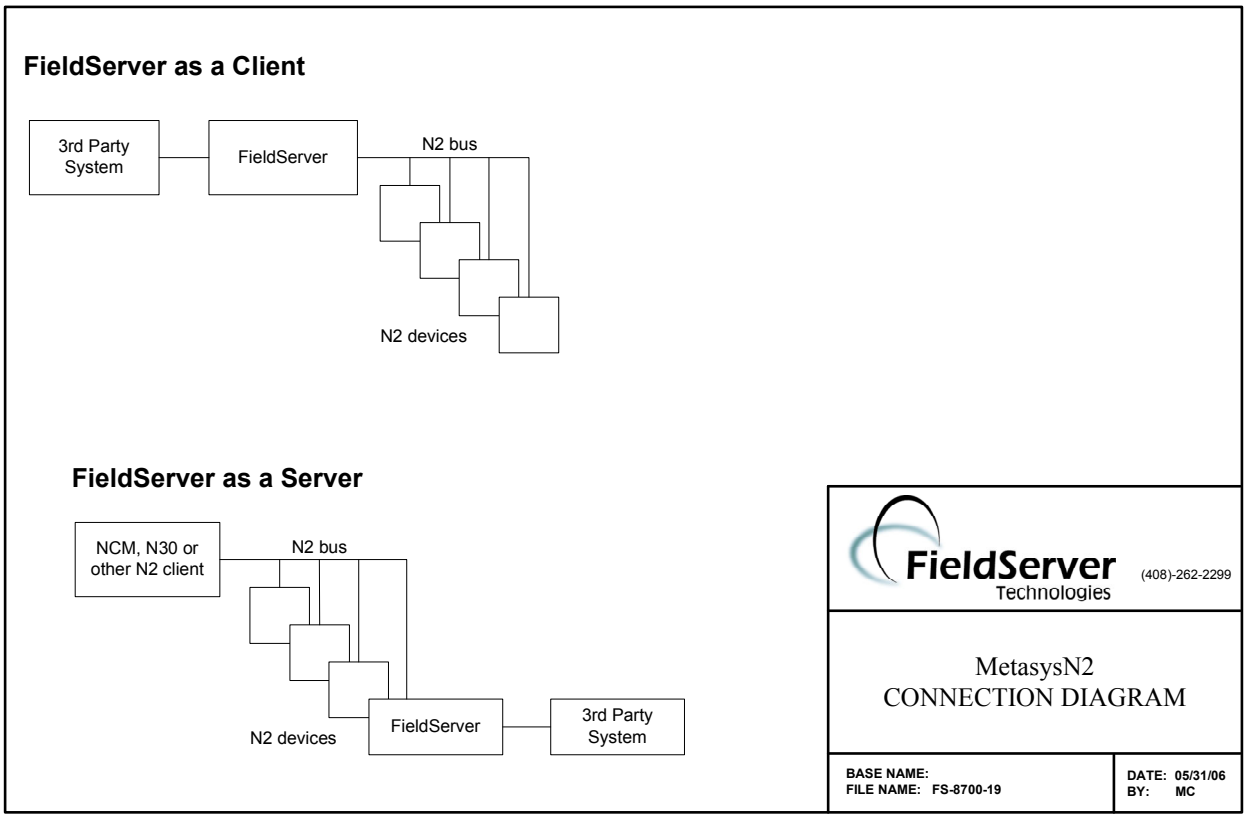
2.2.2. Required 3rd Party Software

Depending on application, JCI software may be necessary

2.2.3. Required 3rd Party Configuration

Depending on application, third party devices may need configuration

3. Hardware Connections



3.1. Hardware Connection Tips / Hints

When using the FS-X40 ensure that the FieldServer is connected to the network using one or both of the RS-485 ports marked R1 and R2. If more ports are required, P1-P8 may be used in conjunction with an RS-232-to-RS-485 converter.

When using the FS-X20, ensure that the serial port is configured as an RS-485 port. Refer to Appendix B.3 for more information.

Only one N2 Client may be connected to a N2 network. If the FieldServer is to act as a Client, ensure that no other Clients are connected to the same N2 network.

Note: Interceptor mode is no longer supported for this driver.

4. Configuring the FieldServer as a Metasys N2 Client

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (See ".csv" sample files provided with the FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Metasys N2 Server.

4.1. Data Arrays/Descriptors

The configuration file defines the FieldServer interfaces, and the data routing required. In order to enable the FieldServer for Metasys N2 communications, the driver independent FieldServer buffers need to be declared in the "Data Arrays" section, the destination device addresses need to be declared in the "Client Side Nodes" section, and the data required from the Servers needs to be mapped in the "Client Side Map Descriptors" section.

Note that in the tables, * indicates an optional parameter, with the **bold** legal value being the default value. Where only one legal value is given, no other values for that parameter are allowed.

Section Title		
Data_Arrays		
Column Title	**Function**	**Legal Values**
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Array_Format	Provide data format. Each Data Array can only take on one format.	Float, Bit, UInt16, SInt16, Packed_Bit, Byte, Packed_Byte, Swapped_Byte
Data_Array_Length	Number of Data Objects. Must be larger than the data storage area required by the Map Descriptors for the data being placed in this array.	1-10,000

Example

```
//  Data Arrays

Data_Arrays
Data_Array_Name,    Data_Format,    Data_Array_Length
DA_AI_01,           UInt16,         200
DA_AO_01,           UInt16,         200
DA_DI_01,           Bit,            200
DA_DO_01,           Bit,            200
```

4.2. Client Side Connection Descriptions

Section Title
Connections

Column Title	Function	Legal Values
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2[1]
Protocol	Specify protocol used	Metasys_N2
Baud*	Specify baud rate	**9600**
Parity*	Specify parity	**None**
Data_Bits*	Specify data bits	**8**
Stop_Bits*	Specify stop bits	**1**
Handshaking*	Specify hardware handshaking	**None**
Poll _Delay*	Time between internal polls	**0**
Line_Drive_On*	Duration of RTS assert before start of transmission	**0.001s**
Line_Drive_Off*	Duration of RTS assert after end of transmission	**0.000s**

Example

```
// Client Side Connections

Connections
Port,       Protocol
R1,         Metasys_N2
```

[1] Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

4.3. Client Side Node Descriptors

Section Title
Nodes

Column Title	Function	Legal Values
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	Station address of physical Server node	1-255
Protocol	Specify protocol used	Metasys_N2
Connection	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2[1]
Node_Type	Identify type of device If this parameter is omitted the driver treats the configuration as a N2Open configuration and marks the Node_Type as N2OpenClient when using Ruinet to check the Node parameters. If the Node_Type is specified as N2Open then the driver still acts as N2 Open configuration but some legacy port expander functionality used in some legacy advanced configuration is enabled.	**N2OpenClient**, DX9100, VMA, N2Open

Example

```
//  Client Side Nodes

Nodes
Node_Name,      Node_ID,    Protocol,       Connection,     Node_Type
PLC 1,          1,          Metasys_N2,     P8,             VMA
```

4.4. Client Side Map Descriptors

4.4.1. FieldServer Related Map Descriptor Parameters

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	One of the Data Array names from “Data Array” section above
Data_Array_Offset	Starting location in Data Array	0 to maximum specified in “Data Array” section above
Function	Function of Client Map Descriptor	RDBC, WRBC, WRBX

4.4.2. Driver Related Map Descriptor Parameters

4.4.2.1. N2Open Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	If the vendor device lists a point as BD then use Data_Type=Byte. If the vendor device lists a point as ADI then use Data_Type=Integer. If the vendor device lists a point as ADF then use Data_Type=Float_Reg. AI, AO, DI, DO, Float_Reg, Integer, Byte
Length	Length of Map Descriptor	1
Address	Starting address of read block	1-256
MN2_Function*	Used to specify an N2-specific function, e.g. COS. See description below.	COS, Override, Release
MN2_Attribute*	Used to specify the attribute if an attribute other than Current Value is to be accessed. See attribute table below	**See N2Open Attribute Table**

N2Open Attribute Table		
Data Type	**Attribute No.**	**Attribute**
Analog Input	**1** **2** 3 **4** **5** **6** **7** **8**	Object Configuration Object Status **Analog Input Value** Low Alarm Limit High Alarm Limit Low Warn Limit High Warn Limit Differential
Binary Input	**1** **2**	Object Configuration Object Status
Analog Output	**1** **2** **3**	Object Configuration Object Status Current Value
Binary Output	**1** **2** **3** **4** **5**	Object Configuration Object Status Minimum On-Time Minimum Off-Time Maximum Cycles/Hour
Internal Float	**1** **2**	Object Status Current Value
Internal Integer	**1** **2**	Object Status Current Value
Internal Byte	**1** **2**	Object Status Current Value

Using Change of State (COS) – N2Open

If a large number of points are to be monitored, optimal efficiency is achieved by using the COS mechanism instead of reading each individual point directly. A N2Open device responds to a COS poll with a change record if a change has taken place. On startup the device will report the state of all its points when it receives a COS poll.

Two kinds of Map Descriptors are required for every node that is to be monitored using COS:

A COS polling Map Descriptor with **Function** set to **COS_Poll**.

A **COS_Read** (i.e. **Function** set to **COS_Read**) Map Descriptor for every point on that node that is to be monitored. Any COS records received will be stored to the matching Map Descriptor data location.

Note that the COS_Read Map Descriptor has an optional scan_interval. If a value is set the Map Descriptor will poll at that rate in addition to receiving COS data. This can be used if the values are to be refreshed continually even if they don't change. If the scan_interval is not configured (through omitting the column, or by setting the value to '-') the COS_Read Map Descriptor will not cause active polls once the value has been initialized. See 4.4.4 for example.

Important Note on COS Operation in N2Open

Please be aware that N2Open devices will only report value changes under the following conditions:

Point Type	Conditions that will trigger a COS report
AI	point status change (e.g. override) change in alarm or warning status **NB: no value changes within the normal band are reported by COS!**
AO	point status change (e.g. override) **NB: no value changes within the normal band are reported by COS!**
BI, BO	point status change (e.g. override); includes current value (On/Off)
ADI, ADF, BD	none; COS cannot be used with internal data types.

Using Override and Release – N2Open

It is not normally necessary to use the Override command explicitly as the FieldServer automatically uses this command when the Current Value attribute of a point is written. For any other attribute it uses the Write command. It will sometimes be necessary to send a Release command to an overridden point, however. To do this, a Map Descriptor must be configured with **Function** set to **wrbx** and **MN2_Function** set to **Release**. Then, when any value is stored to the Map Descriptor data location, the Release command will be sent to the N2Open point specified by the Map Descriptor.

4.4.2.2. VMA Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type	AI, AO, DI, DO, Driver (used for ADF, ADI and BD)
Length	Length of Map Descriptor	1
Address	Starting address of read block	1-256
MN2_Type	Data type specifier to be set when Data_Type has been set to Driver	5-7

ADI, ADF and BD types: using the "Driver" Data_Type and MN2_Type fields

The VMA protocol uses a byte value to specify the data types. The standard types **AI**, **AO**, **DI** and **DO** correspond to a byte value of 1 through 4 respectively. The types **ADF**, **ADI** and **BD** are believed to correspond to a byte value of 5 through 7 respectively. If the user wishes to use any other type value based on knowledge of a particular VMA configuration, then that value may also be specified here. Refer to Section 4.4.5 for a specific example.

Driver Data_Type MN2_Type values		
Point Type	**Known Value[2]**	**Suggested Value[3]**
AI	1	
AO	2	
BI	3	
BO	4	
ADF		5
ADI		6
BD		7

If a large number of points are to be monitored, optimal efficiency is achieved by using the COS mechanism instead of reading each individual point directly. An N2Open device responds to a COS poll with a change record if a change has taken place. On startup the device will report the state of all its points when it receives a COS poll.

Three kinds of Map Descriptors are required for every node that is to be monitored using COS:

- A COS initialization Map Descriptor with **Function** set to **ARS** and **MN2_Function** set to **COS_Enable**. This Map Descriptor enables COS polling of those points on the VMA for which Passive Map Descriptors exist.
- A COS polling Map Descriptor with **Function** set to **rdbc** and **MN2_Function** set to **COS**.
- A **Passive** (i.e. **Function** set to **Passive**) Map Descriptor for every point on that node that is to be monitored. Any COS records received will be stored to the matching Map Descriptor data location.

See example in Section 4.4.5

Using Override and Release - VMA

It is normally not necessary to use the Override command explicitly as the FieldServer automatically uses this command when the Current Value attribute of a point is written. For any other attribute it uses the Write command. It will sometimes be necessary to send a Release command to an overridden point, however. To do this, a Map Descriptor must be configured with **Function** set to **wrbx** and **MN2_Function** set to **Release**. Then, when any value is stored to the Map Descriptor data location, the Release command will be sent to the VMA point specified by the Map Descriptor.

Note: The VMA Release function only works for analog and binary inputs (**AI** and **BI**). Outputs may be restored to their original value using an explicit write command.

[2] For information only. Do not use Driver type for these, but specify AI, AO, BI or BO directly in the Data_Type field.

[3] These values are believed to be correct for the corresponding point types, but no guarantee can be given at this time.

4.4.2.3. DX9100 Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
Length	Length of Map Descriptor	1
Address	Starting address of read block	0 - 2397

For DX9100 addresses please refer to the DX9100 user documentation. This lists the name, function (read/write) and data format of all available points. Alternatively, obtain assistance from FieldServer Technical Support.

4.4.3. Timing Parameters

Column Title	Function	Legal Values
Scan_Interval	Rate at which data is polled	≥0.001s

4.4.4. Map Descriptor Example 1 – N2Open

```
//  Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name,    DA_Name,    DA_Offset,    Function,    MN2_Function,    Node_name    Address    Data_Type    Scan_Interval
AI_READ,                DA_AI3,     0,            RDBC,        -,               Node_A,      1,         Ana_Input    5s
COS_POLLER,             DA_COS,     0,            COS_Poller,  -,               Node_A,      -,         -,           30s
AI_BY_COS,              DA_AI3,     1,            COS_Read,    -,               Node_A,      1,         Ana_Input,   -
BI_BY_COS,              DA_BI,      3,            COS_Read,    -,               Node_A,      2,         Dig_Input,   10
AI_1_Release,           A_Release,  0,            WRBX,        Release,         Node_A,      1,         Ana_Input,   -
```

Normal read Map Descriptor. Note RDBC function, Data_Type and Address specification.

COS_Poller Map Descriptor. This only specifies the Function, Node and Scan_Interval.

COS_Read Map Descriptor sets point type the same as normal read Map Descriptor. Optional scan_interval.

Release function used in conjunction with wrbx. If the Data Array value specified in this Map Descriptor is changed, then a Release command is sent to the specified point.

Note:
To get change of state (COS) reports from an analog port, the warning/alarm levels need to be configured. If the alarm/warning values are not known, then it would be better to configure an RDBC Map Descriptor which reads the analog input directly. Limits will then not be required.

4.4.5. Map Descriptor Example 2 - VMA

```
//  Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name,  DA_Name,  DA_Offset,  Function,  MN2_Function,  Node_name,  Address,  Data_Type,  MN2_Type,  Scan_Interval
AI_READ,              DA_AI3,   0,          RDBC,      -,             Node_VMA,   1,        Ana_Input   -,         5s
AO_WRITE,             DA_AO,    0,          WRBX,      -,             Node_VMA,   3,        Ana_Output, -,         30s
AO_Release,           DA_AO,    0,          WRBX,      Release,       Node_VMA,   3,        Ana_Output, -,         -
Special_type,         DA_DRV,   10,         DBC,       -,             Node_VMA,   23,       Driver,     5,         10s
```

Override release function configured as wrbx.

Driver type 5 (ADF) configured here.

4.4.6. Map Descriptor Example 3 - DX9100

```
//  Client side Map Descriptors

Map_Descriptors
Map_Descriptor_Name,    DA_Name,    DA_Offset,    Function,    Node_name,    Address,    Scan_Interval
D191_ZN1-T,             DA_AI3,     0,            RDBC,        Node_DX,      1223,       5s
D191_ZN1-S,             DA_AO3,     0,            WRBX,        Node_DX,      1225,       -
```

The address alone is sufficient to specify DX9100 point. The Data Type is determined by the device.

5. Configuring the FieldServer as a Metasys N2 Server

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration Manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (See ".csv" files on the driver diskette).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Metasys N2Open Client. **Note that only the N2Open variation of the N2 protocol may be used when configuring the FieldServer as a Server**.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Metasys N2 communications, the driver independent FieldServer buffers need to be declared in the "Data Arrays" section, the FieldServer virtual node(s) needs to be declared in the "Server Side Nodes" section, and the data to be provided to the Clients needs to be mapped in the "Server Side Map Descriptors" section. Details on how to do this can be found below.

Note that in the tables, * indicates an optional parameter, with the bold legal value being the default.

5.1. Server Side Connection Descriptors

Section Title		
Connections		
Column Title	**Function**	**Legal Values**
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2[4]
Protocol	Specify protocol used	Metasys_N2
Baud*	Specify baud rate	**9600**
Parity*	Specify parity	**None**
Data_Bits*	Specify data bits	**8**
Stop_Bits*	Specify stop bits	**1**
Handshaking*	Specify hardware handshaking	**None**
Poll _Delay*	Time between internal polls	**0**
Line_Drive_On*	Duration of RTS assert before start of transmission	**0.001s**
Line_Drive_Off*	Duration of RTS assert after end of transmission	**0.000s**

Example

```
//      Server Side Connections

Connections
Port,           Protocol
P8,             Metasys_N2
```

[4] Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

5.2. Server Side Node Descriptors

Section Title
Nodes

Column Title	Function	Legal Values
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	MetasysN2 station address of physical Server node	1-255
Protocol	Specify protocol used	Metasys_N2
Server_Hold_Timeout*	Specifies time FieldServer will reserve Server side connection while waiting for the Client side to update data in Data_Array	< 0.175s[5]
Node_Type*	Identify type of device This parameter need not be specified. The Server side of the driver can only operate as an N2 Server and the option for setting it to N2Open is purely for backward compatibility.	**N2OpenServer,** N2Open

Example

```
// Server Side Nodes

Nodes
Node_Name,          Node_ID,        Protocol
PLC 1,              1,              Metasys_N2
```

[5] Can be set to >0.175s if the Client has bee set to timeout after >200ms. Refer to Appendix E for more information.

5.3. Server Side Map Descriptors

5.3.1. FieldServer Specific Map Descriptor Parameters

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	One of the Data Array names from “Data Array” section above
Data_Array_Offset	Starting location in Data Array	0 to maximum specified in “Data Array” section above
Function	Function of Server Map Descriptor	Server

5.3.2. Driver Specific Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in “Client Node Descriptor” above
Data_Type	Data type	If the vendor device lists a point as BD then use Data_Type=Byte. If the vendor device lists a point as ADI then use Data_Type=Integer. If the vendor device lists a point as ADF then use Data_Type=Float_Reg. AI, AO, DI, DO, Float_Reg, Integer, Byte
Length	Length of Map Descriptor	1 - 256
Address	Starting address of read block	1 - 256

5.3.3. Map Descriptor Example.

```
//  Server Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name,    Data_Array_Name,    Data_Array_Offset,    Data_Type,    Function,    Node_name,    Address,    Length
A1,                     DA_AI3,             10,                   Ana_Input,    Server,      Node_A,       1,          256
```

The Data_Array_Offset sets the start of the data range covered by the Server Map Descriptor. The number of points included is determined by the Length field.

The Server function tells the FieldServer that this Map Descriptor makes data available to a Client sending polls to the FieldServer.

Note that a single Server Map Descriptor of length 256 can represent all possible points of one type (e.g. AI).

Appendix A. Advanced Topics

Appendix A.1. Writing to DX9100 Binary Outputs

When writing to DX9100 Binary Outputs, it is important to understand that each binary output has three bits associated with it as described in the table below:

Bit	Description	Address[6]
Output status bit	The status bit will indicate the actual status of the output in the field. This bit cannot be modified by the FieldServer as it is read only, and is meant for actual status display.	Address 5
Output control bit	The control bit will allow the FieldServer to write a command to the DX9100 for the associated output. This command will only execute if the override is enabled by the override bit.	Low byte of Address 1
Override bit	The override bit must be set to enable an output to be written to by the FieldServer. If this is not set, then the control bit will be ignored.	High byte of Address 1

Example

The example below better illustrates the mapping that is typically needed to deal with DX9100 Binary Outputs. Note that since all 6 outputs are packed into word format when transmitted, a Packed_Bit Array is typically required to access the bits individually. In this Example, the status for BO3-BO8 can be found in offsets 0-5 of DA_PO1_02, the control bits can be found in offsets 0-5 of DA_PO1_01, and the override bits can be found in offsets 8-13 of DA_PO1_01.

```
Data_Arrays
Data_Array_Name,    Data_Format,    Data_Array_Length
DA_PO1_01    ,      Packed_Bit ,    100
DA_PO1_02    ,      Packed_Bit ,    100

Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset,  Function,  Node_Name,  Address,  Scan_Interval
CMD_DO1_05 ,          DA_PO1_01 ,       0 ,                 Rdbc ,     Dev_30 ,    0001 ,    1.0s   // DO3 - DO8 Set and Enable
CMD_DO1_06 ,          DA_PO1_02 ,       0 ,                 Rdbc ,     Dev_30 ,    0005 ,    1.0s   // DO3 - DO8 Status
```

[6] Binary Outputs start at address 3, so the first bit of each of these addresses will represent B03

Appendix A.2. Managing Analog Inputs and Outputs for DX9100.

Relative offset for viewing an AI is 7
Relative offset for viewing and forcing an AO is 6

Appendix B. Troubleshooting tips

Appendix B.1. Connection Tips & Hints

When using the FieldServer as an **N2 Client**, make very sure that it is **the only Client / master** on the N2 network. If there is another Client on the network there will be communication conflicts. These will be reflected on the FieldServer as protocol errors.

Appendix B.2. Offline Behavior

When the Client node on the FieldServer goes offline, the corresponding data objects on the FieldServer are also marked offline. If a client polls a virtual FieldServer node for this particular data, therefore, an offline response will be returned by the FieldServer. A request from an master device for a FieldServer to identify itself would be met by a valid response, however. This could lead to confusion and status toggling. This can be addressed using Responsible Map Descriptors and by configuring the virtual FieldServer using the Offline_Method option. Please refer to the Configuration Manual for further information.

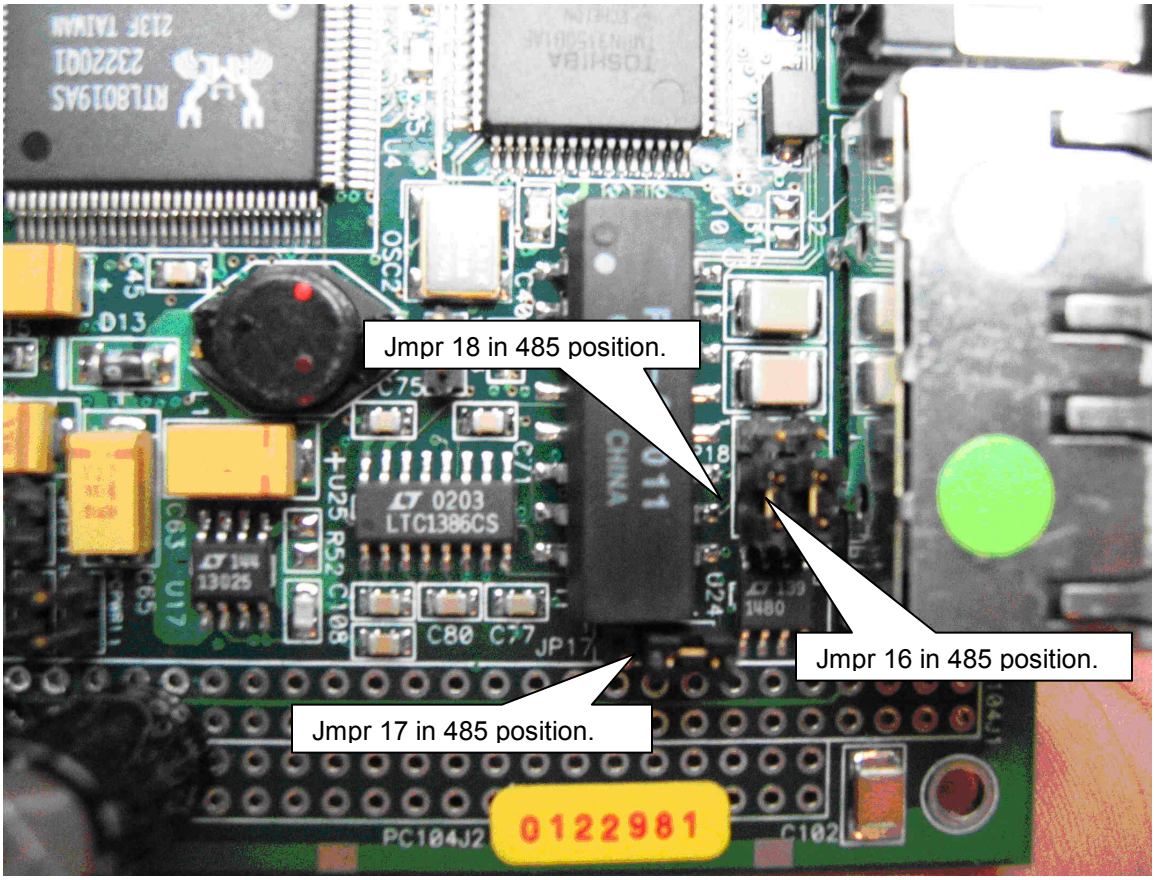
Appendix B.3. Tip on Overrides

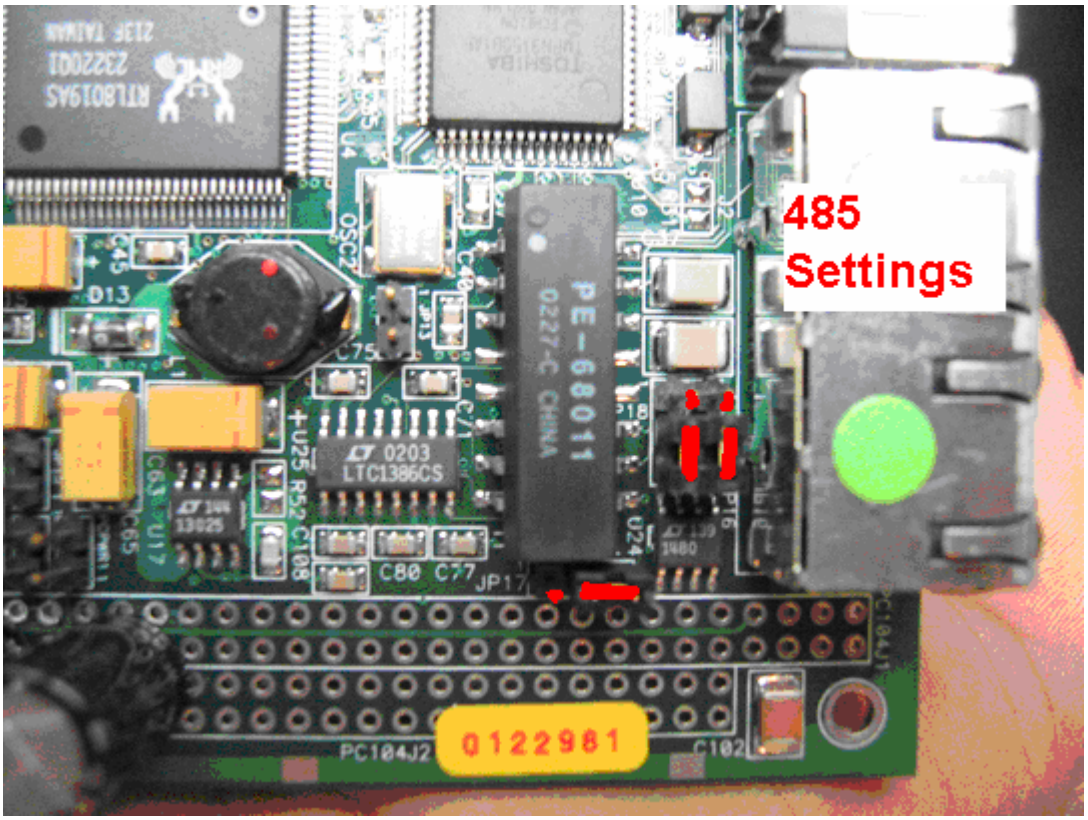
It is important that there be only one device (including the slave device itself) updating a point which is in overridden mode. The reason for this is that the value of the point could be changed by an update from a non-Metasys Server before the override is released by the Metasys Master. In this case, the FieldServer would respond to a poll from the Master with this changed data.

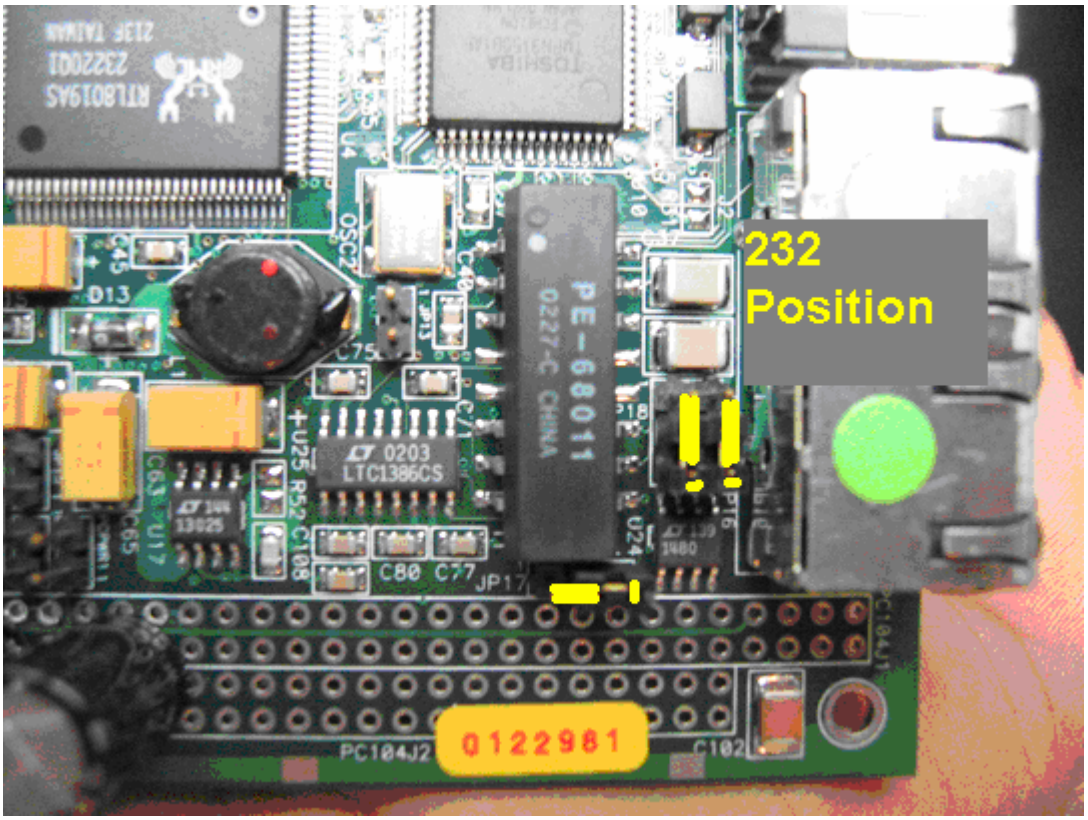
Appendix C. Setting up FS-B20 for RS-485

Appendix C.1. Jumper Settings:

Jumpers jp16, jp17, and jp18 need to be transferred from pins 1-2 to pins 2-3 in order to enable RS-485. These jumpers can be found just behind the RJ45 ports inside the box

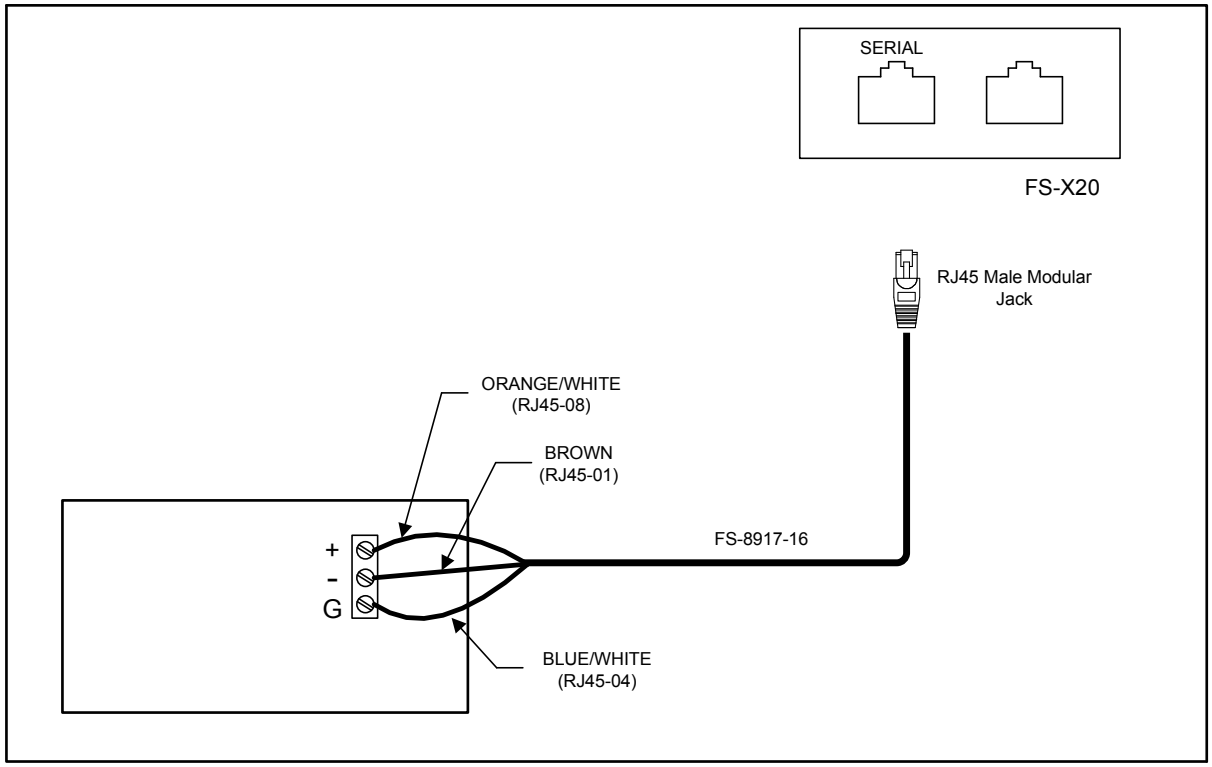


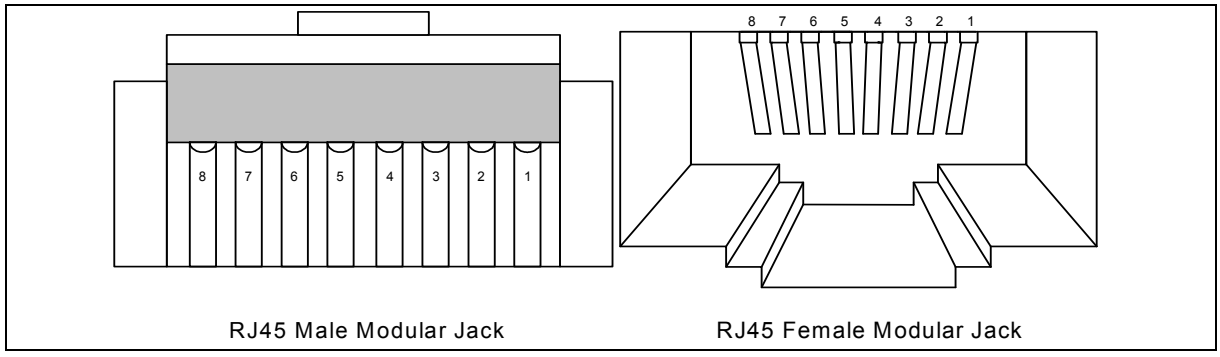

485
Settings


232
Position

Appendix C.2. Hardware connections

The FS-8917-16 pigtail cable is typically used for this port arrangement. Connection is depicted in the following diagram.





Appendix C.3. Configuration Settings

- The Port address in the Configuration needs to be set to R1 instead of P1.
- Line_Drive_On and Line_Drive_Off need to be defined in the connections section of the configuration file. These need to be set to at least 0.001s. Refer to Sections 4.2 and 5.1 for more information.

Appendix D. Memory Maps

Appendix D.1. Metasys DX9100 Memory Map

Programmable modules			
Module	1	64	0040H
Module	2	160	00A0H
Module	3	256	0100H
Module	4	352	0160H
Module	5	448	01C0H
Module	6	544	0220H
Module	7	640	0280H
Module	8	736	02E0H
Module	9	832	0340H
Module	10	928	03A0H
Module	11	1024	0400H
Module	12	1120	0460H
Analog input modules			
Module	1	1216	04C0H
Module	2	1232	04D0H
Module	3	1248	04E0H
Module	4	1264	04F0H
Module	5	1280	0500H
Module	6	1296	0510H
Module	7	1312	0520H
Module	8	1328	0530H
Analog output modules			
Module	1	1344	0540H
Module	2	1360	0550H
Version	2	or later (new for version 6.0):	
Module	9	2304	0900H
Module	10	2320	0910H
Module	11	2336	0920H
Module	12	2352	0930H
Module	13	2368	0940H
Module	14	2384	0950H
Digital output modules			
Module	3	1376	0560H
Module	4	1392	0570H
Module	5	1408	0580H
Module	6	1424	0590H
Module	7	1440	05A0H
Module	8	1456	05B0H
Extension modules			
Module	1	1472	05C0H
Module	2	1552	0610H
Module	3	1632	0660H
Module	4	1712	06B0H
Module	5	1792	0700H
Module	6	1872	0750H
Module	7	1952	07A0H
Module	8	2032	07F0H
Time schedule modules			
Module	1	2112	0840H
Module	2	2128	0850H
Module	3	2144	0860H
Module	4	2160	0870H
Module	5	2176	0880H
Module	6	2192	0890H
Module	7	2208	08A0H
Module	8	2224	08B0H
Optimal start / stop module			
Module	1	2240	08C0H
Module	2	2272	08E0H

General control module				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Byte	Read	UNIT	Device model. For DX-9100 always 5
1	Word	Write	SUP	Supervisory central control
2	Byte	Read	MNT	Maintenance control
3	Word	Read	DIAG	Diagnistics
4	Byte	Read	DICT	Digital input counters
5	Byte	Read	TOS	Triac output status
6	Byte	Read	DIS	Digital input status
7	Word	Read	AIS	Analog input status
8	Word	Read	LRST1	Logic results 37637
9	Word	Read	LRST2	Logic results 17-32
10	Word	Write	LCOS1	Logic constants 37637
11	Word	Write	LCOS2	Logic constants 17-32
12	-	-	-	Spare
13	LONG	Write	CNTR1	DI1 pulse count
14	LONG	Write	CNTR2	DI2 pulse count
15	LONG	Write	CNTR3	DI3 pulse count
16	LONG	Write	CNTR4	DI4 pulse count
17	LONG	Write	CNTR5	DI5 pulse count
18	LONG	Write	CNTR6	DI6 pulse count
19	LONG	Write	CNTR7	DI7 pulse count
20	LONG	Write	CNTR8	DI8 pulse count
21	Word	Write	PASS	Password code
22	Byte	Write	PC1	Prescaler DI1 counter
23	Byte	Write	PC2	Prescaler DI2 counter
24	Byte	Write	PC3	Prescaler DI3 counter
25	Byte	Write	PC4	Prescaler DI4 counter
26	Byte	Write	PC5	Prescaler DI5 counter
27	Byte	Write	PC6	Prescaler DI6 counter
28	Byte	Write	PC7	Prescaler DI7 counter
29	Byte	Write	PC8	Prescaler DI8 counter
30	Byte	Write	UIA	User interface address
31	Word	Write	ALD@	Alarm disable condition source
32	Byte	Write	DXS1	DX-9100 type settings
33	Word	Write	ALG	Standard algorithm type
34	FP	Write	ACO1	Analog constant 1
35	FP	Write	ACO2	Analog constant 2
36	FP	Write	ACO3	Analog constant 3
37	FP	Write	ACO4	Analog constant 4
38	FP	Write	ACO5	Analog constant 5
39	FP	Write	ACO6	Analog constant 6
40	FP	Write	ACO7	Analog constant 7
41	FP	Write	ACO8	Analog constant 8
42	Byte	Write	PLCNT	PLC control and status
43	Word	Read	PLCPC	PLC program counter

Programmable Module Type				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Byte	Write	PMTYP	Programmable module type
1	Word	Write	PMOPT	Programmable module options
2	Byte	Write	PMF1	Function channel number 1 - F1
3	Byte	Write	PMF2	Function channel number 2 - F2
4	Byte	Write	PMF3	Function channel number 3 - F3
5	Byte	Write	PMF4	Function channel number 4 - F4
6	Byte	Write	PMF5	Function channel number 5 - F5
7	Byte	Write	PMF6	Function channel number 6 - F6
8	Byte	Write	PMF7	Function channel number 7 - F7
9	Byte	Write	PMF8	Function channel number 8 - F8
10	Word	Write	PMI1@	Input connection - I1@
11	Word	Write	PMI2@	Input connection - I2@
12	Word	Write	PMI3@	Input connection - I3@
13	Word	Write	PMI4@	Input connection - I4@
14	Word	Write	PMI5@	Input connection - I5@
15	Word	Write	PMI6@	Input connection - I6@
16	Word	Write	PMI7@	Input connection - I7@
17	Word	Write	PMI8@	Input connection - I8@
18	Word	Write	PMI9@	Input connection - I9@
19	Word	Write	PMI10@	Input connection - I10@
20	Word	Write	PMI11@	Input connection - I11@
21	Word	Write	PMI12@	Input connection - I12@
22	Word	Write	PMI13@	Input connection - I13@
23	Word	Write	PMI14@	Input connection - I14@
24	Word	Write	PMI15@	Input connection - I15@
25	Word	Write	PMI16@	Input connection - I16@
26	FP	Write	PMK01	Module constant - K1
27	FP	Write	PMK02	Module constant - K2
28	FP	Write	PMK03	Module constant - K3
29	FP	Write	PMK04	Module constant - K4
30	FP	Write	PMK05	Module constant - K5
31	FP	Write	PMK06	Module constant - K6
32	FP	Write	PMK07	Module constant - K7
33	FP	Write	PMK08	Module constant - K8
34	FP	Write	PMK09	Module constant - K9
35	FP	Write	PMK10	Module constant - K10
36	FP	Write	PMK11	Module constant - K11
37	FP	Write	PMK12	Module constant - K12
38	FP	Write	PMK13	Module constant - K13
39	FP	Write	PMK14	Module constant - K14
40	FP	Write	PMK15	Module constant - K15
41	FP	Write	PMK16	Module constant - K16
42	FP	Write	PMK17	Module constant - K17
43	FP	Write	PMK18	Module constant - K18
44	FP	Write	PMK19	Module constant - K19
45	FP	Write	PMK20	Module constant - K20
46	FP	Write	PMK21	Module constant - K21
47	FP	Write	PMK22	Module constant - K22
48	FP	Write	PMK23	Module constant - K23
49	FP	Write	PMK24	Module constant - K24
50	FP	Write	PMK25	Module constant - K25
51	FP	Write	PMK26	Module constant - K26
52	FP	Write	PMK27	Module constant - K27
53	FP	Write	PMK28	Module constant - K28
54	FP	Write	PMK29	Module constant - K29
55	FP	Write	PMK30	Module constant - K30
56	FP	Write	PMK31	Module constant - K31

Programmable Module Type				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
57	FP	Write	PMK32	Module constant - K32
58	FP	Write	PMK33	Module constant - K33
59	FP	Write	PMK34	Module constant - K34
60	FP	Write	PMOU1	Output channel 1
61	FP	Write	PMOU2	Output channel 2
62	FP	Write	PMOU3	Output channel 3
63	FP	Write	PMOU4	Output channel 4
64	FP	Write	PMOU5	Output channel 5
65	FP	Write	PMOU6	Output channel 6
66	FP	Write	PMOU7	Output channel 7
67	FP	Write	PMOU8	Output channel 8
68	FP	Write	PMAX1	Auxiliary output 1
69	FP	Write	PMAX2	Auxiliary output 2
70	Byte	Write	PMHDC	Hold mode control/status
71	Byte	Write	PMDO	Logic output control and status
72	Word	Read	PMST	Programmable module status
73	LONG	Write	PMAC1	Accumulator channel 1
74	LONG	Write	PMAC2	Accumulator channel 2
75	LONG	Write	PMAC3	Accumulator channel 3
76	LONG	Write	PMAC4	Accumulator channel 4
77	LONG	Write	PMAC5	Accumulator channel 5
78	LONG	Write	PMAC6	Accumulator channel 6
79	LONG	Write	PMAC7	Accumulator channel 7
80	LONG	Write	PMAC8	Accumulator channel 8

Analog Input Modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Word	Write	AIT	Analog inout type
1	FP	Write	HR	High range input
2	FP	Write	LR	Low range input
3	FP	Write	HIA	High alarm limit
4	FP	Write	LOA	Low alarm limit
5	FP	Write	FTC	Filter constant
6	FP	Write	ADF	Differential on alarm limit (units)
7	FP	Read	AI	Analog input value
8	FP	Read	AI%	Analog input %
9	FP	Read	ADC	Analog input in counts
10	Byte	Read	AIST	Analog input status

Analog Output Modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Byte	Write	AOT	Analog output type
1	Word	Write	AO@	Source of analog output module
2	Word	Write	AOF@	Output forcing logic connection
3	FP	Write	HRO	Output high range
4	FP	Write	LRO	Output low range
5	FP	Write	OFL	Output % value in forcing mode
6	FP	Write	OUT	Output module output value %
7	Byte	Write	AOC	Analog output control and status
8	FP	Write	HLO	Output high limit
9	FP	Write	LLO	Output low limit
10	Word	Write	INC@	DDC increase logic connection
11	Word	Write	DEC@	DDC decrease logic connection
12	Word	Write	ENL@	Limit function enable logic connection

Digital Output Modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**

Digital Output Modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Byte	Write	DOT	Digital output options
1	Word	Write	DO@	Source of digital output module
2	Word	Write	FB@	Source of feedback signal
3	Word	Write	DOF@	Output forcing logic connection
4	FP	Write	HRO	Output high range
5	FP	Write	LRO	Output low range
6	FP	Write	FST	PAT output full stroke time/DAT cycle
7	FP	Write	DB	PAT deadband
8	FP	Write	HLO	Output high limit
9	FP	Write	LLO	Output low limit
10	FP	Write	OFL	Output % value in forcing mode
11	FP	Write	OUT	Output module output value %
12	Byte	Write	DOC	Logic output control and status
13	Word	Write	INC@	DDC increase logic connection
14	Word	Write	DEC@	DDC decrease logic connection
15	Word	Write	ENL@	Limit function enable logic connection

Extension Modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Word	Write	XTIOMAP	Extension module I/O map
1	Word	Write	XTIOTYP	Extension module I/O type
2	Word	Write	XTIOMOD	Extension module I/O mode
3	Byte	Write	XTADX	Extension module address 0-255
4	Word	Write	XTI1@	Point connection - I1
5	Word	Write	XTI2@	Point connection - I2
6	Word	Write	XTI3@	Point connection - I3
7	Word	Write	XTI4@	Point connection - I4
8	Word	Write	XTI5@	Point connection - I5
9	Word	Write	XTI6@	Point connection - I6
10	Word	Write	XTI7@	Point connection - I7
11	Word	Write	XTI8@	Point connection - I8
12	FP	Write	XTHR01	High output range point 1
13	FP	Write	XTLR01	Low output range point 1
14	FP	Write	XTHR02	High output range point 2
15	FP	Write	XTLR02	Low output range point 2
16	FP	Write	XTHR03	High output range point 3
17	FP	Write	XTLR03	Low output range point 3
18	FP	Write	XTHR04	High output range point 4
19	FP	Write	XTLR04	Low output range point 4
20	FP	Write	XTHR05	High output range point 5
21	FP	Write	XTLR05	Low output range point 5
22	FP	Write	XTHR06	High output range point 6
23	FP	Write	XTLR06	Low output range point 6
24	FP	Write	XTHR07	High output range point 7
25	FP	Write	XTLR07	Low output range point 7
26	FP	Write	XTHR08	High output range point 8
27	FP	Write	XTLR08	Low output range point 8
28	FP	Write	XTHIA1	High alarm limit point 1
29	FP	Write	XTLOA1	Low alarm limit point 1
30	FP	Write	XTHIA2	High alarm limit point 2
31	FP	Write	XTLOA2	Low alarm limit point 2
32	FP	Write	XTHIA3	High alarm limit point 3
33	FP	Write	XTLOA3	Low alarm limit point 3
34	FP	Write	XTHIA4	High alarm limit point 4
35	FP	Write	XTLOA4	Low alarm limit point 4
36	FP	Write	XTHIA5	High alarm limit point 5
37	FP	Write	XTLOA5	Low alarm limit point 5

Extension Modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
38	FP	Write	XTHIA6	High alarm limit point 6
39	FP	Write	XTLOA6	Low alarm limit point 6
40	FP	Write	XTHIA7	High alarm limit point 7
41	FP	Write	XTLOA7	Low alarm limit point 7
42	FP	Write	XTHIA8	High alarm limit point 8
43	FP	Write	XTLOA8	Low alarm limit point 8
44	Word	Read	XTAIS	Extension module alarms
45	FP	Read	XTAI1	Analog input value 1
46	FP	Read	XTAI2	Analog input value 2
47	FP	Read	XTAI3	Analog input value 3
48	FP	Read	XTAI4	Analog input value 4
49	FP	Read	XTAI5	Analog input value 5
50	FP	Read	XTAI6	Analog input value 6
51	FP	Read	XTAI7	Analog input value 7
52	FP	Read	XTAI8	Analog input value 8
53	FP	Write	XTAO1	Analog output value 1
54	FP	Write	XTAO2	Analog output value 2
55	FP	Write	XTAO3	Analog output value 3
56	FP	Write	XTAO4	Analog output value 4
57	FP	Write	XTAO5	Analog output value 5
58	FP	Write	XTAO6	Analog output value 6
59	FP	Write	XTAO7	Analog output value 7
60	FP	Write	XTAO8	Analog output value 8
61	LONG	Write	XTDIC1	Digital input 1 pulse count
62	LONG	Write	XTDIC2	Digital input 2 pulse count
63	LONG	Write	XTDIC3	Digital input 3 pulse count
64	LONG	Write	XTDIC4	Digital input 4 pulse count
65	LONG	Write	XTDIC5	Digital input 5 pulse count
66	LONG	Write	XTDIC6	Digital input 6 pulse count
67	LONG	Write	XTDIC7	Digital input 7 pulse count
68	LONG	Write	XTDIC8	Digital input 8 pulse count
69	Byte	Write	XTCNT	Extension module hold control
70	Byte	Write	XTDO	Logic outputs control and status
71	Byte	Read	XTDI	Logic inputs status
72	Byte	Read	XTSTC	Extension module local status

Time schedule modules				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Word	Write	TSOPT	Time schedule options LSB
1	Word	Write	TSEX@	External extension logical connection
2	Word	Write	TSON@	On forcing logical connection
3	Word	Write	TSOF@	Off forcing logical connection
4	FP	Write	TSXTM	Extension time (min)
5	FP	Write	TSTIM	Time to next event (min)
6	Byte	Write	TSSTA	Time schedule status

Programmable modules			
Module	1	64	0040H
Module	2	160	00A0H
Module	3	256	0100H
Module	4	352	0160H
Module	5	448	01C0H
Module	6	544	0220H
Module	7	640	0280H
Module	8	736	02E0H
Module	9	832	0340H
Module	10	928	03A0H
Module	11	1024	0400H
Module	12	1120	0460H
Analog input modules			
Module	1	1216	04C0H
Module	2	1232	04D0H
Module	3	1248	04E0H
Module	4	1264	04F0H
Module	5	1280	0500H
Module	6	1296	0510H
Module	7	1312	0520H
Module	8	1328	0530H
Analog output modules			
Module	1	1344	0540H
Module	2	1360	0550H
Version	2	or later (new for version 6.0):	
Module	9	2304	0900H
Module	10	2320	0910H
Module	11	2336	0920H
Module	12	2352	0930H
Module	13	2368	0940H
Module	14	2384	0950H
Digital output modules			
Module	3	1376	0560H
Module	4	1392	0570H
Module	5	1408	0580H
Module	6	1424	0590H
Module	7	1440	05A0H
Module	8	1456	05B0H
Extension modules			
Module	1	1472	05C0H
Module	2	1552	0610H
Module	3	1632	0660H
Module	4	1712	06B0H
Module	5	1792	0700H
Module	6	1872	0750H
Module	7	1952	07A0H
Module	8	2032	07F0H
Time schedule modules			
Module	1	2112	0840H
Module	2	2128	0850H
Module	3	2144	0860H
Module	4	2160	0870H
Module	5	2176	0880H
Module	6	2192	0890H
Module	7	2208	08A0H
Module	8	2224	08B0H
Optimal start / stop module			
Module	1	2240	08C0H
Module	2	2272	08E0H

Appendix D.2. Metasys DC9100 Memory Map

Note: The DC9100 is not currently supported by the FieldServer MetasysN2 Driver. The information below is for interest and future use only.

PAGE 0					
Item DEC	Item HEX	Signal Condition	Read/Write	Johnson Tag	Description
0	0	Byte	Read	MODL	Device model. Value always either 2 or 12
1	1	FP	Read	INP1	Analog input 1
2	2	FP	Read	INP2	Analog input 2
3	3	FP	Read	INP3	Analog input 3
4	4	FP	Read	INP4	Analog input 4
5	5	FP	Read	INP5	Analog input 5
6	6	FP	Read	INP6	Analog input 6
7	7	FP	Read	INP7	Analog input 7
8	8	FP	Read	INP8	Analog input 8
9	9	FP	Read	NCM1	Numeric calculation modul result
10	A	FP	Read	NCM2	Numeric calculation modul result
11	B	FP	Read	NCM3	Numeric calculation modul result
12	C	FP	Read	NMC4	Numeric calculation modul result
13	D	FP	Write	REC1	Remote constant 1
14	E	FP	Write	REC2	Remote constant 2
15	F	FP	Write	REC3	Remote constant 3
16	10	FP	Write	REC4	Remote constant 4
17	11	FP	Write	OUT1	Control output 1
18	12	FP	Write	OUT2	Control output 2
19	13	FP	Write	OUT3	Control output 3
20	14	FP	Write	OUT4	Control output 4
21	15	FP	Write	OUT5	Control output 5
22	16	FP	Write	OUT6	Control output 6
23	17	FP	Write	OUT7	Control output 7
24	18	FP	Write	OUT8	Control output 8
25	19	FP	Write	WSP1	Working setpoint 1
26	1A	FP	Write	WSP2	Working setpoint 2
27	1B	FP	Write	WSP3	Working setpoint 3
28	1C	FP	Write	WSP4	Working setpoint 4
29	1D	FP	Write	WSP5	Working setpoint 5
30	1E	FP	Write	WSP6	Working setpoint 6
31	1F	FP	Write	WSP7	Working setpoint 7
32	20	FP	Write	WSP8	Working setpoint 8
33	21	Word	Read	STW1	Status word 1
34	22	Word	Read	STW2	Status word 2
35	23	Word	Read	STW3	Status word 3
36	24	Word	Read	STW4	Status word 4
37	25	Word	Read	STW5	Status word 5
38	26	Word	Read	STW6	Status word 6
39	27	Word	Read	STW7	Status word 7
40	28	Word	Read	STW8	Status word 8
41	29	Word	Write	DOUT	Logic output DDC control
42	2A	Byte	Write	CHLD	Hold mode control
43	2B	Byte	Write	COMP	Supervisory mode control

PAGE 0					
Item DEC	**Item HEX**	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
44	2C	-	-	Spare	
45	2D	-	-	Spare	
46	2E	Byte	Write	PV1@	Process variable connection
47	2F	Byte	Write	RS1@	Remote setpoint connection
48	30	Byte	Write	RV1@	Reference variable connection
49	31	Byte	Write	PB1@	Proportional band connection
50	32	Byte	Write	OF1@	OFF mode logic control connection
51	33	Byte	Write	SB1@	STAND-BY mode logic control connection
52	34	Byte	Write	RA1@	Reverse action logic control connection
53	35	Byte	Write	EF1@	External forcing logic control connection
54	36	Byte	Write	TYPE1	Controller type
55	37	FP	Write	LS1	Local setpoint
56	38	FP	Write	PB1	Proportional band
57	39	FP	Write	TI1	Reset action
58	3A	FP	Write	TD1	Rate action
59	3B	FP	Write	HL1	Upper limit of the control output
60	3C	FP	Write	LL1	Lower limit of the control output
61	3D	FP	Write	BS1	Change of setpoint during STAND-BY
62	3E	FP	Write	BO1	Change of setpoint during OFF
63	3F	FP	Write	AD1	Deviation alarm
64	40	Byte	Write	PV2@	Process variable connection
65	41	Byte	Write	RS2@	Remote setpoint connection
66	42	Byte	Write	RV2@	Reference variable connection
67	43	Byte	Write	PB2@	Proportional band connection
68	44	Byte	Write	OF2@	OFF mode logic control connection
69	45	Byte	Write	SB2@	STAND-BY mode logic control connection
70	46	Byte	Write	RA2@	Reverse action logic control connection
71	47	Byte	Write	EF2@	External forcing logic control connection
72	48	Byte	Write	TYPE2	Controller type
73	49	FP	Write	LS2	Local setpoint
74	4A	FP	Write	PB2	Proportional band
75	4B	FP	Write	TI2	Reset action
76	4C	FP	Write	TD2	Rate action
77	4D	FP	Write	HL2	Upper limit of the control output
78	4E	FP	Write	LL2	Lower limit of the control output
78	4E	FP	Write	LL2	Lower limit of the control output
79	4F	FP	Write	BS2	Change of setpoint during STAND-BY
80	50	FP	Write	BO2	Change of setpoint during OFF
81	51	FP	Write	AD2	Deviation alarm
82	52	Byte	Write	PV3@	Process variable connection
83	53	Byte	Write	RS3@	Remote setpoint connection
84	54	Byte	Write	RV3@	Reference variable connection
85	55	Byte	Write	PB3@	Proportional band connection
86	56	Byte	Write	OF3@	OFF mode logic control connection
87	57	Byte	Write	SB3@	STAND-BY mode logic control connection
88	58	Byte	Write	RA3@	Reverse action logic control connection

PAGE 0					
Item DEC	**Item HEX**	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
89	59	Byte	Write	EF3@	External forcing logic control connection
90	5A	Byte	Write	TYPE3	Controller type
91	5B	FP	Write	LS3	Local setpoint
92	5C	FP	Write	PB3	Proportional band
93	5D	FP	Write	TI3	Reset action
94	5E	FP	Write	TD3	Rate action
95	5F	FP	Write	HL3	Upper limit of the control output
96	60	FP	Write	LL3	Lower limit of the control output
97	61	FP	Write	BS3	Change of setpoint during STAND-BY
98	62	FP	Write	BO3	Change of setpoint during OFF
99	63	FP	Write	AD3	Deviation alarm
100	64	Byte	Write	PV4@	Process variable connection
101	65	Byte	Write	RS4@	Remote setpoint connection
102	66	Byte	Write	RV4@	Reference variable connection
103	67	Byte	Write	PB4@	Proportional band connection
104	68	Byte	Write	OF4@	OFF mode logic control connection
105	69	Byte	Write	SB4@	STAND-BY mode logic control connection
106	6A	Byte	Write	RA4@	Reverse action logic control connection
107	6B	Byte	Write	EF4@	External forcing logic control connection
108	6C	Byte	Write	TYPE4	Controller type
109	6D	FP	Write	LS4	Local setpoint
110	6E	FP	Write	PB4	Proportional band
111	6F	FP	Write	TI4	Reset action
112	70	FP	Write	TD4	Rate action
113	71	FP	Write	HL4	Upper limit of the control output
114	72	FP	Write	LL4	Lower limit of the control output
115	73	FP	Write	BS4	Change of setpoint during STAND-BY
116	74	FP	Write	BO4	Change of setpoint during OFF
117	75	FP	Write	AD4	Deviation alarm
118	76	Byte	Write	PV5@	Process variable connection
119	77	Byte	Write	RS5@	Remote setpoint connection
120	78	Byte	Write	RV5@	Reference variable connection
121	79	Byte	Write	PB5@	Proportional band connection
122	7A	Byte	Write	OF5@	OFF mode logic control connection
123	7B	Byte	Write	SB5@	STAND-BY mode logic control connection
124	7C	Byte	Write	RA5@	Reverse action logic control connection
125	7D	Byte	Write	EF5@	External forcing logic control connection
126	7E	Byte	Write	TYPE5	Controller type
127	7F	FP	Write	LS5	Local setpoint
128	80	FP	Write	PB5	Proportional band
129	81	FP	Write	TI5	Reset action
130	82	FP	Write	TD5	Rate action
131	83	FP	Write	HL5	Upper limit of the control output
132	84	FP	Write	LL5	Lower limit of the control output
133	85	FP	Write	BS5	Change of setpoint during STAND-BY
134	86	FP	Write	BO5	Change of setpoint during OFF

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Item DEC	**Item HEX**	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
135	87	FP	Write	AD5	Deviation alarm
136	88	Byte	Write	PV6@	Process variable connection
137	89	Byte	Write	RS6@	Remote setpoint connection
138	8A	Byte	Write	RV6@	Reference variable connection
139	8B	Byte	Write	PB6@	Proportional band connection
140	8C	Byte	Write	OF6@	OFF mode logic control connection
141	8D	Byte	Write	SB6@	STAND-BY mode logic control connection
142	8E	Byte	Write	RA6@	Reverse action logic control connection
143	8F	Byte	Write	EF6@	External forcing logic control connection
144	90	Byte	Write	TYPE6	Controller type
145	91	FP	Write	LS6	Local setpoint
146	92	FP	Write	PB6	Proportional band
147	93	FP	Write	TI6	Reset action
148	94	FP	Write	TD6	Rate action
149	95	FP	Write	HL6	Upper limit of the control output
150	96	FP	Write	LL6	Lower limit of the control output
151	97	FP	Write	BS6	Change of setpoint during STAND-BY
152	98	FP	Write	BO6	Change of setpoint during OFF
153	99	FP	Write	AD6	Deviation alarm
154	9A	Byte	Write	PV7@	Process variable connection
155	9B	Byte	Write	RS7@	Remote setpoint connection
156	9C	Byte	Write	RV7@	Reference variable connection
157	9D	Byte	Write	PB7@	Proportional band connection
158	9E	Byte	Write	OF7@	OFF mode logic control connection
159	9F	Byte	Write	SB7@	STAND-BY mode logic control connection
160	A0	Byte	Write	RA7@	Reverse action logic control connection
161	A1	Byte	Write	EF7@	External forcing logic control connection
162	A2	Byte	Write	TYPE7	Controller type
163	A3	FP	Write	LS7	Local setpoint
164	A4	FP	Write	PB7	Proportional band
165	A5	FP	Write	TI7	Reset action
166	A6	FP	Write	TD7	Rate action
167	A7	FP	Write	HL7	Upper limit of the control output
168	A8	FP	Write	LL7	Lower limit of the control output
169	A9	FP	Write	BS7	Change of setpoint during STAND-BY
170	AA	FP	Write	BO7	Change of setpoint during OFF
171	AB	FP	Write	AD7	Deviation alarm
172	AC	Byte	Write	PV8@	Process variable connection
173	AD	Byte	Write	RS8@	Remote setpoint connection
174	AE	Byte	Write	RV8@	Reference variable connection
175	AF	Byte	Write	PB8@	Proportional band connection
176	B0	Byte	Write	OF8@	OFF mode logic control connection
177	B1	Byte	Write	SB8@	STAND-BY mode logic control connection
178	B2	Byte	Write	RA8@	Reverse action logic control connection
179	B3	Byte	Write	EF8@	External forcing logic control connection

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Item DEC	**Item HEX**	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
180	B4	Byte	Write	TYPE8	Controller type
181	B5	FP	Write	LS8	Local setpoint
182	B6	FP	Write	PB8	Proportional band
183	B7	FP	Write	TI8	Reset action
184	B8	FP	Write	TD8	Rate action
185	B9	FP	Write	HL8	Upper limit of the control output
186	BA	FP	Write	LL8	Lower limit of the control output
187	BB	FP	Write	BS8	Change of setpoint during STAND-BY
188	BC	FP	Write	BO8	Change of setpoint during OFF
189	BD	FP	Write	AD8	Deviation alarm
190	BE	Byte	Write	IR1	Range analog input 1
191	BF	FP	Write	HA1	High alarm input 1
192	C0	FP	Write	LA1	Low alarm input 1
193	C1	FP	Write	FI1	Filter time input 1
194	C2	Byte	Write	IR2	Range analog input 2
195	C3	FP	Write	HA2	High alarm input 2
196	C4	FP	Write	LA2	Low alarm input 2
197	C5	FP	Write	FI2	Filter time input 2
198	C6	Byte	Write	IR3	Range analog input 3
199	C7	FP	Write	HA3	High alarm input 3
200	C8	FP	Write	LA3	Low alarm input 3
201	C9	FP	Write	FI3	Filter time input 3
202	CA	Byte	Write	IR4	Range analog input 4
203	CB	FP	Write	HA4	High alarm input 4
204	CC	FP	Write	LA4	Low alarm input 4
205	CD	FP	Write	FI4	Filter time input 4
206	CE	Byte	Write	IR5	Range analog input 5
207	CF	FP	Write	HA5	High alarm input 5
208	D0	FP	Write	LA5	Low alarm input 5
209	D1	FP	Write	FI5	Filter time input 5
210	D2	Byte	Write	IR6	Range analog input 6
211	D3	FP	Write	HA6	High alarm input 6
212	D4	FP	Write	LA6	Low alarm input 6
213	D5	FP	Write	FI6	Filter time input 6
214	D6	Byte	Write	IR7	Range analog input 7
215	D7	FP	Write	HA7	High alarm input 7
216	D8	FP	Write	LA7	Low alarm input 7
217	D9	FP	Write	FI7	Filter time input 7
218	DA	Byte	Write	IR8	Range analog input 8
219	DB	FP	Write	HA8	High alarm input 8
220	DC	FP	Write	LA8	Low alarm input 8
221	DD	FP	Write	FI8	Filter time input 8
222	DE	FP	Write	OH1	Output 1 high range
223	DF	FP	Write	OL1	Output1 low range
224	E0	Byte	Write	OMS1	Source of analog output module 1
225	E1	FP	Write	OH2	Output 2 high range
226	E2	FP	Write	OL2	Output 2 low range
227	E3	Byte	Write	OMS2	Source of analog output module 2
228	E4	FP	Write	OH3	Output OUTA1 high range
229	E5	FP	Write	OL3	Output OUTA1 low range
230	E6	Byte	Write	OMS3	Source of logic output module OUTA

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Item DEC	**Item HEX**	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
231	E7	Byte	Write	OMS4	Source of logic output module OUTB
232	E8	Byte	Write	OMTY1	Output module type
233	E9	FP	Write	FST1	PAT/DAT output 1 timing
234	EA	FP	Write	DB1	Dead band PAT output 1
235	EB	FP	Write	OH5	Output OUTA2 high range
236	EC	FP	Write	OL5	Output OUTA2 low range
237	ED	Byte	Write	OMS5	Source of logic output module OUTA
238	EE	Byte	Write	OMS6	Source of logic output module OUTB
239	EF	Byte	Write	OMTY2	Output module type
240	F0	FP	Write	FST2	PAT/DAT output 2 timing
241	F1	FP	Write	DB2	Dead band PAT output 2
242	F2	FP	Write	OH7	Output OUTA3 high range
243	F3	FP	Write	OL7	Output OUTA3 low range
244	F4	Byte	Write	OMS7	Source of logic output module OUTA
245	F5	Byte	Write	OMS8	Source of logic output module OUTB
246	F6	Byte	Write	OMty3	Output module type
247	F7	FP	Write	FST3	PAT/DAT output 3 timing
248	F8	FP	Write	DB3	Dead band PAT output 3
249	F9	FP	Write	SB1	Symmetry band controller module 5
250	FA	FP	Write	SB2	Symmetry band controller module 6
251	FB	Byte	Write	ALDIS	Alarm disable condition source
252	FC	Byte	Write	RCTY1	DC type settings
253	FD	Byte	Write	ALGT	Standard algorithm type
254	FE	FP	Write	COS1	Spare constant
255	FF	FP	Write	COS2	Spare constant

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Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**	**Relative Item**
0	0	FP	Write	HR1	High range analog input 1
1	1	FP	Write	LR1	Low range analog input 1
2	2	FP	Write	HR2	High range analog input 2
3	3	FP	Write	LR2	Low range analog input 2
4	4	FP	Write	HR3	High range analog input 3
5	5	FP	Write	LR3	Low range analog input 3
6	6	FP	Write	HR4	High range analog input 4
7	7	FP	Write	LR4	Low range analog input 4
8	8	FP	Write	HR5	High range analog input 5
9	9	FP	Write	LR5	Low range analog input 5
10	A	FP	Write	HR6	High range analog input 6
11	B	FP	Write	LR6	Low range analog input 6
12	C	FP	Write	HR7	High range analog input 7
13	D	FP	Write	LR7	Low range analog input 7
14	E	FP	Write	HR8	High range analog input 8
15	F	FP	Write	LR8	Low range analog input 8
16	10	FP	Write	OM%1	Output % Output module 1
17	11	FP	Write	OM%2	Output % Output module 2
18	12	FP	Write	OM%3	Output % Output module 3
19	13	FP	Write	OM%4	Output % Output module 4
20	14	FP	Write	OM%5	Output % Output module 5
21	15	FP	Write	OM%6	Output % Output module 6
22	16	FP	Write	OM%7	Output % Output module 7
23	17	FP	Write	OM%8	Output % Output module 8

Optimal start / stop module				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Byte	Write	OSOPT	Module options
1	Word	Write	OSZT@	Zone temperature connection
2	Word	Write	OSOT@	Outdoor temperature connection
3	Word	Write	OSSP@	Zone temperature setpoint connection
4	Word	Write	OSOB@	Off setpoint bias connection
5	Word	Write	OSDI@	Disable module connection
6	Word	Write	OSDA@	Disable adaptive action connection
7	Word	Write	OSTS@	Connection at time schedule output
8	Word	Write	OSNX@	Connection at next output
9	Word	Write	OSTIM@	Connection at time to next output
10	FP	Write	OSPURGE	Minimum cool / heat time (min)
11	FP	Write	OSMAXST	Maximum start up time (min)
12	FP	Write	OSMAXSO	Maximum shut down time (min)
13	FP	Write	OSBHK	Start mode building heating factor
14	FP	Write	OSBCK	Start mode building cooling factor
15	FP	Write	OSSBHK	Stop mode building heating factor
16	FP	Write	OSSBCK	Stop mode building cooling factor
17	FP	Write	OSFW	Percentage adaptive control (filter weight)
18	FP	Write	OSHTD	Outdoor heating design temperature
19	FP	Write	OSCTD	Outdoor cooling design temperature
20	FP	Write	OSCRNG	Control range
21	FP	Write	OSSP	Zone temperature on setpoint
22	FP	Write	OSOB	Zone temperature off setpoint
23	FP	Write	OSTIM	Remaining time to next event
24	Byte	Write	OSSTA	Operating status

Appendix D.3. Metasys TC9100 Memory Map

Note: The TC9100 is not currently supported by the FieldServer MetasysN2 Driver. The information below is for interest and future use only.

General dynamic Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
0	Byte	Read	UNIT	Device model. For TC-9100 always 06h
1	FP	Write	AI1	Process Temperature
2	FP	Write	AI2	Remote Temperature Set Point Bias
3	FP	Write	AI3	Pressure
4	FP	Write	AI4	Override Input
5				Spare
6				Spare
7				Spare
8				Spare
9	Word	Read	ADC	Selected Analog Input ADC counter
10	FP	Write	OCM1	Output Programmable Module #1
11	FP	Write	OCM2	Output Programmable Module #2
12	FP	Write	OCM3	Output Programmable Module #3
13	FP	Write	OCM4	Output Programmable Module #4
14	FP	Write	OCM5	Output Programmable Module #5
15	FP	Write	OCM6	Output Programmable Module #6
16	FP	Write	WSP1	Working Set Point Control Module 1
17	FP	Write	WSP2	Working Set Point Control Module 2
18	FP	Write	WSP3	Working Set Point Control Module 3
19	FP	Write	WSP4	Working Set Point Control Module 4
20	FP	Write	WSP5	Working Set Point Control Module 5
21	FP	Write	WSP6	Working Set Point Control Module 6
22	FP	Write	XAI1	External Analog Input 1
23	FP	Write	XAI2	External Analog Input 2
24	FP	Write	XAI3	External Analog Input 3
25	FP	Write	XAI4	External Analog Input 4
26	FP	Write	ACO5	Analog Constant 5
27	FP	Write	ACO6	Analog Constant 6
28	FP	Read	WAC	Winter Authority Correction
29	FP	Read	SAC	Summer Authority Correction
30	Word	Read	ALR	Analog Inputs Alarm Status
	W(1)		AIH1	Analog Input 1 High alarm
	W(2)		AIL1	Analog Input 1 High alarm
	W(3)		AIH2	Analog Input 2 High alarm
	W(4)		AIL2	Analog Input 2 Low alarm
	W(5)		AIH3	Analog Input 3 High alarm
	W(6)		AIL3	Analog Input 3 Low alarm
	W(7)		AIH4	Analog Input 4 High alarm
	W(8)		AIL4	Analog Input 4 Low alarm
	W(9)			Not used
	W(10)			Not used
	W(11)			Not used
	W(12)			Not used
	W(13)			Not used
	W(14)			Not used
	W(15)			Not used
	W(16)			Not used
31	Byte	Read	LOS	Logic Output Status
	B(1)		DO3	TRIAC 3 ON
	B(2)		DO4	TRIAC 4 ON
	B(3)		DO5	TRIAC 5 ON

General dynamic Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
	B(4)		DO6	TRIAC 6 ON
	B(5)		DO7	TRIAC 7 ON
	B(6)		DO1	TRIAC 1 ON
	B(7)		DO2	TRIAC 2 ON
	B(8)			Not used
32	Byte	Read	ROS	TC9100 Operation Status
	B(1)		MODS	00 = Night mode
	□			01 = Stand-by mode
	□			10 = Comfort mode
	B(2)			11 = OFF mode
	B(3)		MODT	Temporary mode
	B(4)		MODA	Alternate mode
	B(5)			Supervisory mode enabled
	B(6)		WIN	Window open
	B(7)		OCC	Occupancy Sense
	B(8)		AIRQ	Air Quality Sense
33	Byte	Write	MSK	Outputs Central Control - Enable
	B(1)		DO3E	Enable TRIAC 3
	B(2)		DO4E	Enable TRIAC 4
	B(3)		DO5E	Enable TRIAC 5
	B(4)		DO6E	Enable TRIAC 6
	B(5)		DO7E	Enable TRIAC 7
	B(6)		DO1E	Enable TRIAC 1
	B(7)		DO2E	Enable TRIAC 2
34	Byte	Write	ODC	Outputs Central Control - Set Level
	B(1)		DO3C	TRIAC 3 ON
	B(2)		DO4C	TRIAC 4 ON
	B(3)		DO5C	TRIAC 5 ON
	B(4)		DO6C	TRIAC 6 ON
	B(5)		DO7C	TRIAC 7 ON
	B(6)		DO1C	TRIAC 1 ON
	B(7)		DO2C	TRIAC 2 ON
35	Byte	Write	HLD	Control Loops Hold
	B(1)			Loop #1 Hold
	B(2)			Loop #2 Hold
	B(3)			Loop #3 Hold
	B(4)			Loop #4 Hold
	B(5)			Loop #5 Hold
	B(6)			Loop #6 Hold
36	Byte	Write	HLD	Computer mode Control
	B(1)			Loop #1 Hold WSP override
	B(2)			Loop #2 Hold WSP override
	B(3)			Loop #3 Hold WSP override
	B(4)			Loop #4 Hold WSP override
	B(5)			Loop #5 Hold WSP override
	B(6)			Loop #6 Hold WSP override
37	Byte	Write	SUP	Supervisory Mode Control
	B(1)		MODC	00 = Night mode request
	□			01 = Stand-by mode request
	□			10 = Comfort mode request
	B(2)			11 = OFF mode request
	B(3)		SOFF	Shut-Off mode request
	B(4)		STUP	Start-Up mode request
	B(5)			Not used
	B(6)			Supervisory Mode Control
	B(7)		MAN	Manual OP Mode

General dynamic Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
	B(8)			Supervisory System Active Refresh
38	Byte	Read	LSC	Control & status
	B(1)		MNT	Maintenance Started
	B(2)			Maintenance Stopped
	B(3)		RAS	Reverse Action
	B(4)			Loop #1 Active
	B(5)		IAS	Intrusion Alarm
	B(6)		AFM	Anti freezing Mode Active
	B(7)		FOS	Three speed Fan Override Real Status
	B(8)			Loop #3 Active
39	FP	Write	PM1K1	Constant K1 Module #1
40	Byte	R/W	PM1I@1	Input Connection I1@
41	Byte	R/W	PM1I@2	Input Connection I2@
42	Byte	R/W	PM1I@3	Input Connection I3@
43	Word	R/W	PM1TYP	Options
44	FP	R/W	PM1K2	Constant K2
45	FP	R/W	PM1K3	Constant K3
46	FP	R/W	PM1K4	Constant K4
47	FP	R/W	PM1K5	Constant K5
48	FP	R/W	PM1K6	Constant K6
49	FP	R/W	PM1K7	Constant K7
50	FP	R/W	PM2K1	Constant K1 Module #2
51	Byte	R/W	PM2I@1	Input Connection I1@
52	Byte	R/W	PM2I@2	Input Connection I2@
53	Byte	R/W	PM2I@3	Input Connection I3@
54	FP	R/W	PM2TYP	Options
55	FP	R/W	PM2K2	Constant K2
56	FP	R/W	PM2K3	Constant K3
57	FP	R/W	PM2K4	Constant K4
58	FP	R/W	PM2K5	Constant K5
59	FP	R/W	PM2K6	Constant K6
60	FP	R/W	PM2K7	Constant K7
61	FP	R/W	PM3K1	Constant K1 Module #3
62	Byte	R/W	PM3I@1	Input Connection I1@
63	Byte	R/W	PM3I@2	Input Connection I2@
64	Byte	R/W	PM3I@3	Input Connection I3@
65	FP	R/W	PM3TYP	Options
66	FP	R/W	PM3K2	Constant K2
67	FP	R/W	PM3K3	Constant K3
68	FP	R/W	PM3K4	Constant K4
69	FP	R/W	PM3K5	Constant K5
70	FP	R/W	PM3K6	Constant K6
71	FP	R/W	PM3K7	Constant K7
72	FP	R/W	PM4K1	Constant K1 Module #4
73	Byte	R/W	PM4I@1	Input Connection I1@
74	Byte	R/W	PM4I@2	Input Connection I2@
75	Byte	R/W	PM4I@3	Input Connection I3@
76	FP	R/W	PM4TYP	Options
77	FP	R/W	PM4K2	Constant K2
78	FP	R/W	PM4K3	Constant K3
79	FP	R/W	PM4K4	Constant K4
80	FP	R/W	PM4K5	Constant K5
81	FP	R/W	PM4K6	Constant K6
82	FP	R/W	PM4K7	Constant K7
83	FP	R/W	PM5K1	Constant K1 Module #5
84	Byte	R/W	PM5I@1	Input Connection I1@
85	Byte	R/W	PM5I@2	Input Connection I2@

General dynamic Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
86	Byte	R/W	PM5I@3	Input Connection I3@
87	FP	R/W	PM5TYP	Options
88	FP	R/W	PM5K2	Constant K2
89	FP	R/W	PM5K3	Constant K3
90	FP	R/W	PM5K4	Constant K4
91	FP	R/W	PM5K5	Constant K5
92	FP	R/W	PM5K6	Constant K6
93	FP	R/W	PM5K7	Constant K7
94	FP	R/W	PM6K1	Constant K1 Module #6
95	Byte	R/W	PM6I@1	Input Connection I1@
96	Byte	R/W	PM6I@2	Input Connection I2@
97	Byte	R/W	PM6I@3	Input Connection I3@
98	FP	R/W	PM6TYP	Options
99	FP	R/W	PM6K2	Constant K2
100	FP	R/W	PM6K3	Constant K3
101	FP	R/W	PM6K4	Constant K4
102	FP	R/W	PM6K5	Constant K5
103	FP	R/W	PM6K6	Constant K6
104	FP	R/W	PM6K7	Constant K7

Input Output Config Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
105	Word	Read	VER	Firmware Version
106	Spare			
107	Spare			
108	FP	R/W	HIA1	High Alarm AI1
109	FP	R/W	LOA1	Low Alarm AI1
110	FP	R/W	HIA2	High Alarm AI2
111	FP	R/W	LOA2	Low Alarm AI2
112	FP	R/W	HIA3	High Alarm AI3
113	FP	R/W	LOA3	Low Alarm AI3
114	FP	R/W	HIA4	High Alarm AI4
115	FP	R/W	LOA4	Low Alarm AI4
116	Byte	R/W	OCN1	Output #1 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.
	B(5)			11111
	B(6)			000 = Not used
	□			001 = Output for Solenoids
	□			010 = 0 to 10 V Analog Output
	□			011 = ON/OFF Output
	□			100 = DAT Output Type
	□			101 = PAT Output Type
	B(8)			110 = Multistage ON/OFF Type
117	FP	R/W	OCO1	PAT/DAT Timing for Output Module #1
118	Byte	R/W	OCN2	Output #2 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.
	B(5)			11111
	B(6)			000 = Not used
	□			001 = Output for Solenoids
	□			010 = 0 to 10 V Analog Output
	B(8)			011 = ON/OFF Output
119	FP	R/W	OCO2	PAT Dead Band/Multistate Hysteresis #1
120	Byte	R/W	OCN3	Output #3 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.

Input Output Config Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
	B(5)			11111
	B(6)			000 = Not used
	□			011 = ON/OFF Output
	□			100 = DAT Output Type
	□			101 = PAT Output Type
	B(8)			110 = Multistage ON/OFF Type
121	FP	R/W	OCO3	PAT/DAT Timing for Output Module #3
122	Byte	R/W	OCN4	Output #4 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.
	B(5)			11111
	B(6)			000 = Not used
	□			011 = ON/OFF Output
	B(8)			
123	FP	R/W	OCO4	PAT Dead Band/Multistate Hysteresis #3
124	Byte	R/W	OCN5	Output #5 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.
	B(5)			11111
	B(6)			000 = Not used
	□			011 = ON/OFF Output
	□			100 = DAT Output Type
	□			101 = PAT Output Type
	□			110 = Multistage ON/OFF Type
	B(8)			111 = Three Windings Control
125	FP	R/W	OCO5	PAT/DAT Timg Outpt Mod #5 FSB-pnt #1
126	Byte	R/W	OCN6	Output #6 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.
	B(5)			11111
	B(6)			000 = Not used
	□			
	B(8)			
127	FP	R/W	OCO6	PAT/DAT Timg Outpt Mod #5 FSB-pnt #2
128	Byte	R/W	OCN7	Output #7 Configuration
	B(1)			00001 Src of Module (Analog Items 1..31)
	□			?.
	B(5)			11111
	B(6)			000 = Not used
	□			
	B(8)			
129	FP	R/W	OCO7	Fan Speed Break-point #3
130	spare			
131	Word	R/W	ALG	Configuration Index 1
132	Word	Write	XST	Diagnostic Status
	W(1)	Read		Gain x 2 Jumper
	W(2)	Read		Integral Action Zeroing Jumper
	W(3)	Read		Zone 1 Jumper
	W(4)	Read		Zone 2 Jumper
	W(5)	Clear	DIAL	Dial Request Status
	W(6)			Not used
	W(8)	Read		Intelligent Command Module Com Failure
	W(9)	Read	XTAI1	not valid
	W(10)	Read	XTAI2	not valid
	W(11)	Read	XTAI3	not valid
	W(12)	Read	XTAI4	not valid
	W(13)	Read		EEPROM not protected

Input Output Config Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
	W(14)	Read		Reset Cycle indication
	W(15)	Read		00 = Power Up Reset
	□			01 = External Reset
	□			10 = Oscillator Failure
	W(16)	Read		11 = Watchdog Reset
133	Word	R/W	TCS2	TC9100 Controller Options
	W(1)			00 Select Analog Input 1 ADC
	□			to
	W(2)			11 Select Analog Input 4 ADC
	W(3)			TM9100 does not overrd the proc Variable
	W(4)			Half Alternate Mode Timing
	W(5)			0 = Celsius 1 = Fahrenheit
	W(6)			0 = 50 Hz 1 = 60 Hz Power Line
	W(7)			Enable Facilitator Mode
	W(8)			TRIAC7 is ON if mode is Comfort
	W(9)			Digital Input #1 Mode
	□			000 = Not used
	□			001 = Window Open
	□			010 = Occupancy Sensor
	□			011 = Air Quality Sensor
	□			100 = Reverse Action
	W(11)			101 = Intrusion Alarm
	W(12)			Negate Digital Input #1
	W(13)			Digital Input #2 Mode
	□			000 = Not used
	□			001 = Window Open
	□			010 = Occupancy Sensor
	□			011 = Air Quality Sensor
	□			100 = Reverse Action
	W(15)			101 = Intrusion Alarm
	W(16)			Negate Digital Input #2
134	Word	R/W	TCS3	Enable Jumper Options
	W(1)			Enable Integral Zeroing Loop #1
	W(2)			Enable Integral Zeroing Loop #2
	W(3)			Enable Integral Zeroing Loop #3
	W(4)			Enable Integral Zeroing Loop #4
	W(5)			Enable Integral Zeroing Loop #5
	W(6)			Enable Integral Zeroing Loop #6
	W(7)			Not used
	W(8)			Not used
	W(9)			Enable Gain Doubling Loop #1
	W(10)			Enable Gain Doubling Loop #2
	W(11)			Enable Gain Doubling Loop #3
	W(12)			Enable Gain Doubling Loop #4
	W(13)			Enable Gain Doubling Loop #5
	W(14)			Enable Gain Doubling Loop #6
135	Byte	Write	TCS1	Controller Options
	B(1)			Not used
	B(2)			Not used
	B(3)			Not used
	B(4)			Not used
	B(5)			Not used
	B(6)			Not used
	B(7)			Not used
	B(8)			Default Action 1=Reverse
136	Word	R/W	HDW1	Hardware Configuration
137	FP	R/W	HRI1	High Range AI1

Input Output Config Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
138	FP	R/W	LRI1	Low Range AI1
139	FP	R/W	FTC1	Filter Constant AI1
140	FP	R/W	OFS1	Offset Compensation AI1
141	Byte	R/W	IOP1	Analog Input Options
	B(1)			Controller reference
	□			1 to 6
	B(3)			
	B(4)			Input Type: 0=volt 1=resistance
	B(5)			Input Mode
	□			000 - Linear Range
	□			001-Thermistor Linearization 2252.at 25C
	□			010 - Square Root
	□			011 - 0.2 suppression
	□			100-Thermistor Linearization 10 k. at 25C
	B(7)			101 - Square Root & 20 % suppression
	B(8)			Not used
142	FP	R/W	HRI2	High Range AI2
143	FP	R/W	LRI2	Low Range AI2
144	FP	R/W	FTC2	Filter Constant AI2
145	FP	R/W	OFS2	Offset Compensation AI2
146	Byte	R/W	IOP2	Analog Input Options (see IOP1)
147	FP	R/W	HRI3	High Range AI3
148	FP	R/W	LRI3	Low Range AI3
149	FP	R/W	FTC3	Filter Constant AI3
150	FP	R/W	OFS3	Offset Compensation AI3
151	Byte	R/W	IOP3	Analog Input Options (see IOP1)
152	FP	R/W	HRI4	High Range AI4
153	FP	R/W	LRI4	Low Range AI4
154	FP	R/W	FTC4	Filter Constant AI4
155	FP	R/W	OFS4	Offset Compensation AI4
156	Byte	R/W	IOP4	Analog Input Options (see IOP1)
157	Byte	Write	OS	TC9100 Requested Operating Status
	B(1)			00 = Night mode
	□			01 = Stand-by mode
	□			10 = Comfort mode
	B(2)			11 = OFF mode
	B(3)			Not used
	B(4)			Not used
	B(5)			Operating Mode Toggle: Base- Alternate
	B(6)			Not used
	B(7)			Force Operating Mode
	B(8)			Command Module Active
158	Word	Write	STIME	TM9100 Real Time Clk Synchronization
	W(1)		RTC	Minutes 0..59
	□			
	W(6)			
	W(7)			Spare
	W(8)			Spare
	W(9)		RTC	Hours 0..23
	□			
	W(13)			
	W(14)		RTC	Day of Week 1..7
	□			
	W(16)			
159	Byte	R/W	OT@	Outdoor Temperature Connection
160	FP	Write	SPW	Winter set point
161	FP	Write	SPS	Summer set point

Input Output Config Parameters				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
162	FP	Write	WA	Winter Authority Slope
163	FP	Write	SA	Summer Authority Slope
164	Byte	R/W	FT@	Freeze Temperature connection
165	FP	Write	FSP	Freeze set point
166	FP	R/W	FDIF	Freeze Differential
167	Word	Write	LOO	Input/Output Override Control
	W(1)	Read		Three Speed Fan Actual Speed
	□			00 = Output OFF
	□			01 = Speed #1
	□			10 = Speed #2
	W(2)	Read		11 = Speed #3
	W(3)			Not used
	W(4)	Read	FOS	Three spd Fan Overrd Reqst by Hardware
	W(5)	Write		Fan Speed Reqst by Command Module
	□			00 = Output OFF
	□			01 = Speed #1
	□			10 = Speed #2
	W(6)			11 = Speed #3
	W(7)			TM9100 Real Time Clk Refresh Request
	W(8)		FOR	Three speed Fan Overrd Reqst Cmd Mod
	W(9)		AIO1	Analog Input #1 Override
	W(10)		AIO2	Analog Input #2 Override
	W(11)		AIO3	Analog Input #3 Override
	W(12)		AIO4	Analog Input #4 Override
168	Word	Write	CLACT	Control Loops Activity Mode
	W(1)	Read		Loop #1 Heating
	W(2)	Read		Loop #2 Heating
	W(3)	Read		Loop #3 Heating
	W(4)	Read		Loop #4 Heating
	W(5)	Read		Loop #5 Heating
	W(6)	Read		Loop #6 Heating
	W(7)			Not used
	W(8)			Not used
	W(9)	Write		Loop #1 Active
	W(10)	Write		Loop #2 Active
	W(11)	Write		Loop #3 Active
	W(12)	Write		Loop #4 Active
	W(13)	Write		Loop #5 Active
	W(14)	Write		Loop #6 Active
169	Word	R/W	ALG2	Configuration Index 2
170	FP	R/W	WAL	Winter Authority Limit
171	FP	R/W	SAL	Summer Authority Limit

Items Stored in the TM91xx External Database				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
256	Byte	Read	UNIT	Device Model : xxH
257	FP	Read	TEMP	Room Temperature
258	FP	Read	RSP	Remote Temperature Set Point
259	Word	Read	LOO	Copy of TC9100 Item LOO
260	Byte	Read	JMP	TM9100 Jumper Configuration & status
	B(1)		JMP1	Clock Setting Disable
	B(2)		JMP2	Fan Setting Disable
	B(3)		JMP3	Time Schedule Setting Disable
	B(4)		JMP4	Model with Time Schedule
	B(5)		JMP5	Time Schedule Configuration Changed
261	Word	Write	TIME	Real Time
	W(1)			RTC Minutes 0..59

Items Stored in the TM91xx External Database				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
	□			
	W(6)			
	W(9)			RTC Hours 0..23
	□			
	W(13)			
	W(14)			RTC Dy of Week 1..7
	□			
	W(16)			

TM91xx Daily Schedules:				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
271	Word	Write	DST1	Type of Daily Schedule #1
	W(1)			Mode event 1
	□			00 = Set Night Mode
	□			01 = Set Comfort Mode
	□			10 = Set Stand-By Mode
	W(2)			11 = Set OFF Mode
	W(3)			Mode event 2 (Same Fmt. Mode event 1)
	□			
	W(4)			
	W(5)			Mode event 3 (Same Fmt. Mode event 1)
	□			
	W(6)			
	W(7)			Mode event 4 (Same Fmt. Mode event 1)
	□			
	W(8)			
	W(9)			Mode event 5 (Same Fmt. Mode event 1)
	□			
	W(10)			
	W(11)			Mode event 6 (Same Fmt. Mode event 1)
	□			
	W(12)			
	W(13)			Number of Days of activity 1..7
	□			
	W(15)			
272	Word	Write	E12S1	Event #1 & Event #2 Day #1
272	Word	Write	E34S1	Event #3 & Event #4 Day #1
272	Word	Write	E56S1	Event #5 & Event #6 Day #1
273				Spare
287				Spare
288	Word	Write	DST2	Type of Daily Schedule #2 (Fmt. #1)
289	Word	Write	E12S2	Event #1 & Event #2 Day #2
290	Word	Write	E34S2	Event #3 & Event #4 Day #2
291	Word	Write	E56S2	Event #5 & Event #6 Day #2
292				Spare
303				Spare
304	Word	Write	DST3	Type of Daily Schedule #3 (Fmt. #1)
305	Word	Write	E12S3	Event #1 & Event #2 Day #3
306	Word	Write	E34S3	Event #3 & Event #4 Day #3
307	Word	Write	E56S3	Event #5 & Event #6 Day #3
308				Spare
319				Spare
320	Word	Write	DST4	Type of Daily Schedule #4 (Fmt. #1)
321	Word	Write	E12S4	Event #1 & Event #2 Day #4
322	Word	Write	E34S4	Event #3 & Event #4 Day #4
323	Word	Write	E56S4	Event #5 & Event #6 Day #4

TM91xx Daily Schedules:				
Relative Item	**Signal Condition**	**Read/Write**	**Johnson Tag**	**Description**
324				Spare
335				Spare
336	Word	Write	DST5	Type of Daily Schedule #5 (Fmt. #1)
337	Word	Write	E12S5	Event #1 & Event #2 Day #5
338	Word	Write	E34S5	Event #3 & Event #4 Day #5
339	Word	Write	E56S5	Event #5 & Event #6 Day #5
340				Spare
351				Spare
352	Word	Write	DST6	Type of Daily Schedule #6 (Fmt. #1)
353	Word	Write	E12S6	Event #1 & Event #2 Day #6
354	Word	Write	E34S6	Event #3 & Event #4 Day #6
355	Word	Write	E56S6	Event #5 & Event #6 Day #6
356				Spare
367				Spare
368	Word	Write	DST7	Type of Daily Schedule #7 (Fmt. #1)
369	Word	Write	E12S7	Event #1 & Event #2 Day #7
370	Word	Write	E34S7	Event #3 & Event #4 Day #7
371	Word	Write	E56S7	Event #5 & Event #6 Day #7
372				Spare
383				Spare

Appendix E. Error Messages

Error Message	Description and Action
MN2:#01 WARN. Server_Hold_Timeout is %0.3fs For N2Open Slave typical value is %0.3fs	Typically N2open Clients are configured to timeout after 200ms. If a FieldServer is configured as a Server the Server_Hold_Timeout time should be set to 0.175s or less otherwise the response will be suppressed. This message is printed if the Server_Hold_Timeout is set for >0.175s. If the Client's timeout is >200ms this message may be ignored.

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